



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,973	12/31/2001	Jeong Ho Lee	P21833	5445
7055	7590	11/14/2003	EXAMINER	
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			KRISHNAMURTHY, RAMESH	
			ART UNIT	PAPER NUMBER
			3753	5
DATE MAILED: 11/14/2003				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,973

Applicant(s)

LEE ET AL.

Examiner

Ramesh Krishnamurthy

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4 - 6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 8 and 9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 08 September 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 3753

This office action is responsive to communications filed 09/08/2003.

Claims 1 – 10 are pending.

1. Figure 1. 2A – 2D, 3A and 3B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. Applicant's use of the label - - Related Art - - in the response filed 09/08/2003, is objected to since only that which is old is illustrated. The objection to the drawings will not be held in abeyance.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 3753

4. Claims 1, 4 – 6, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) in view of Miura et al. (US 5,850,851).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses a valve plate (13) having an inlet hole (13a) that draws in a low pressure fluid by an open-and-shut operation driven a piston (12) movement, and a discharging hole (13b) that discharges a high pressure fluid through an open-close operation; and

A check valve (14a) coupled to the inlet hole and a check valve (14b) coupled to the discharge hole of the valve plate (13).

The prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) discloses the invention claimed with the exception of disclosing the check valve of having a helical plate spring structure.

Miura et al. ('851) discloses (figs. 12, 13) a check valve (40C) having a spiral i.e. helical plate spring structure that allows a proper operation of the valve through a construction that provides a positive checked position (i.e. a closed position) and a low-restriction flow in the open position and has many advantages including reduced manufacturing cost by combining the valve and spring into an integrated structure and also simplifying the assembly of the valve into the housing.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have replaced the inlet plate (14a) or the discharge plate (15) with their respective check valves, with a check valve having a helical plate spring

structure for the purpose of obtaining a proper operation of the valve through a construction that provides a positive checked position (i.e. closed position) and a low-restriction flow in the open position along with realizing reduced manufacturing cost by combining the valve and spring into an integrated structure and also simplifying the assembly of the valve into the housing, as recognized by Miura et al..

Regarding claim 4, it is noted that the structural shape of the check valve is such that the width becomes narrower as distance from the hole (opening in plate (36), for example) increases.

Regarding claim 5, it is noted that in the combination of Miura et al. and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification), the movement of each floor or flexible arm (42C), is caused by the piston movement.

Regarding claim 6, it is noted that the device according to the combination of Miura et al. and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) being applicable to fluid compressor/pumps in general, would also work with the fluid being a refrigerant.

Regarding claim 8, it is noted that in the device according to the combination of Miura et al. and the prior art admitted to by the applicant (Figs. 1 – 3B & paragraphs (02) – (21) in the specification) the check valve (40C) (disclosed by Miura et al.) prevents flow in one direction while permits in an opposite direction.

Regarding claim 9, it is noted that the helix shape of the helical plate spring check valve (40C) is a circular helix shape (see Fig. 11).

Art Unit: 3753

Response to Arguments

5. Applicant's arguments with respect to claims 1, 4 – 6, 8 and 9 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (703) 305 - 5295. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Scherbel, can be reached on (703) 308 - 1272. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 - 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.



Ramesh Krishnamurthy
Examiner
Art Unit 3753
November 4, 2003